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Kepone Tests Complete Ready for Application in Hopewell

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KEPONE TESTS COMPLETE
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DAYTON, Ohio, June 8, 1977 -- Research on the thermal decomposition of Kepone has been completed by the University of Dayton and the Surface Combustion Division of Midland-Ross Corporation of Toledo, according to Richard A. Carnes of the United States Environmental Protection Agency, (EPA) Region V of Cincinnati.

All that remains is for the concept of high temperature decomposition of Kepone to be applied in Hopewell, Va. where Life Science Products Co., Inc., a manufacturer of Kepone, closed its doors in 1975 when faced by action from the Virginia department of health. The company was subsequently charged by the U.S. EPA with discharging Kepone into the Hopewell sewerage system and contaminating the James River.

There is still a ban on fishing in the James River and the Chesapeake Bay, Carnes said. Kepone is also suspected of damaging the nervous system of workers at the Hopewell plant.

"We proved in Toledo, as UD researchers forecasted, that Kepone can be decomposed in a high temperature furnace without adding an insult to the environment," Carnes said in a recent telephone interview.

The test burn in Toledo which began in late 1976 has been fraught with problems which Carnes has described as a "conspiracy between Mother Nature and Murphy's Law." Mother Nature furnished the weather which was partly responsible for the energy crisis and the temporary closing of the Toledo furnance. Murphy's Law is the claim that "anything which can go wrong, will go wrong."

The basic concepts for Kepone decomposition were perfected by Don Duvall and Wayne Rubey of the UD Research Institute.

"We very much appreciated the speed with which Duvall and Rubey generated the data, as well as its accuracy," Carnes said. The UD Research Institute offered quick answers from nearby researchers of "demonstrated experience," Carnes said.

Duvall states that the idea of high temperature decomposition is not new. However, the value of the UD research is an important refinement of an idea, Duvall said, pointing to a plot which shows that, although Kepone does begin to decompose at temperatures above 350 degrees centigrade, the process forms another chemical -- hexachlorocyclopentadiene -- which is even more toxic than the Kepone which the researchers are trying to destroy.

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The noxious chemical does disappear once temperatures are elevated above the 500 degree mark; however, a third chemical is formed which Duvall describes as "another bad actor." This time the villain is hexachlorobenzene which is observed only in the products of tests conducted above 600 degrees centigrade. It was only when temperatures approached 1,000 degrees centigrade that UD researchers were satisified that both Kepone and its by-products were safely decomposed.

"Our research gives people in the field an idea of what to expect once they set up a furnace for Kepone decomposition. It is possible that without preliminary research, the idea of high temperature decomposition of Kepone could have been applied without any expectation of some of the repercussions from by-products," Duvall said.

That UD researchers were able to provide such a quick answer to the Kepone problem is partly a coincidence of time and circumstance. Duvall and Rubey were working on a related project for the EPA when the Kepone story made the headlines.

In the course of their investigations, the researchers have built a backlog of experience, not only in the decomposition of Kepone, but also of Mirex and DDT, all pesticides which have been shown to contaminate the environment. The researchers have now moved into preliminary investigations of polychlorinated biphenyls (PCBs) which are primarily used in industry as insulating materials. Introduced in 1929, PCBs have been indentified as widespread contaminants, distributed in air, water, animal and plant tissues. Concentrated exposure to PCBs are said to have skin eruptions, coma and death.

Carnes claims that he is satisified with the results of the "test burn" of Kepone in Toledo although he has some qualms about the manner of presentation of the data from the experiment conducted by the Surface Combustion Division of Midland-Ross based on preliminary work done at UD. The Commonwealth of Virginia is preparing the final report on the test burn.

Carnes said he has been told that his recommendation as an EPA official of Region V will be relied upon by his colle gues in EPA's Region III, in which Hopewell, Va. is located, when a decision is made regarding the Kepone decomposition. High temperature decomposition of Kepone is possible in Hopewell, Carnes added.

All that remains is for the various governmental units involved in the project to commit funds for a decomposition furnace, Carnes said. The cost is almost certain to exceed $1 million. The present status and possible future of the Hopewell project will be explained June 10 in Toledo at a joint conference of all parties involved in the project, Carnes said.

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